MAKÜ | Journal of Mehmet Akif Ersoy University Economics and Administrative Sciences Faculty

e-ISSN: 2149-1658
Volume: 11 / Issue: 1
March, 2024
pp.: 51-65

Measuring Technology Readiness Index Level: Scale Adaption Study *

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* This study is derived from the master's thesis titled "Evaluation of the Opinions of Ankara Training and Research Hospital Staff on Hospital Information Systems"

https://doi.org/10.30798/makuiibf.1097662

Abstract

Technological advancements are transforming healthcare service processes. Moreover, medical care technology plays a critical role in improving the life expectancy and quality of life of the global population. In this context, determining the readiness of employees for technological systems is of great importance. This study aimed to adapt the four-dimensional Technology Readiness Index to Turkish culture. It was based on data obtained from two different sample groups (n=187, n=437). The analyses confirmed the four-factor structure of the Technology Readiness Index. The Cronbach's Alpha coefficient was found to be 0.97. Additionally, the structural validity of the scale's factors was tested and found to be acceptable.

Keywords: Technological Readiness, Health Technologies, Technology, Healthcare Professionals, Healthcare Management.

Article Type	Application Date	Acceptance Date
Research Article	April 3, 2022	December 3, 2023

To cite this article: Günaltay, M. M., Önder, Ö. R. & Özgür, E. G. (2024). Measuring Technology Readiness Index Level: Scale Adaption Study. *Journal of Mehmet Akif Ersoy University Economics and Administrative Sciences Faculty, 11*(1), 51-65. https://doi.org/10.30798/makuiibf.1097662

1. INTRODUCTION

The discovery of penicillin in 1928 marked the first phase of modern medicine based on technology. Various imaging devices developed in the 1980s, such as computed tomography and magnetic resonance imaging, represented the second phase of modern medicine. Technologies like laparoscopes and artificial joints were also part of this phase. The convergence of information technology and life sciences, along with the development and proliferation of clinical information technologies, signifies the third phase of modern medicine (Chaiken, 2008). As the healthcare sector enters this third phase, it is undergoing a significant transformation. This change requires healthcare organizations to adopt new technologies such as internet applications, corporate systems, and mobile technologies. Due to this new business strategy, healthcare organizations must reorganize their processes to reduce costs, increase competitiveness, and provide better, personalized customer services. However, there is a lack of sufficient scientific research on the readiness of healthcare workers to use such technology-based systems.

Health technologies are considered one of the strongest competitive advantages in the delivery of healthcare services. The role of technology in interactions between healthcare institutions and individuals seeking healthcare services is rapidly increasing, as is the number of technology-based products and services. A wide range of technologies is used, including medical imaging systems (MRI, CT, PET, etc.), microelectronics and electromechanical systems, nuclear medicine, computer-equipped devices, medical informatics systems, robotics, wireless systems, minimally invasive technologies, infection control products, neural sensors, stem cell technologies, tissue engineering, telemedicine systems, diagnostic, monitoring and control technologies, and patient monitoring systems (WHO, 2011; TTGV, 2018).

The increasing rates of healthcare institutions providing services through technology-based systems have highlighted a critical gap in the readiness of healthcare workers to use these systems. Despite the growing role of technology, there is a lack of sufficient scientific research on people's readiness to use technology-based systems. In this context, the article introduces the Turkish adaptation of the Technology Readiness Index (TRI), developed by Parasuraman (2000), to evaluate people's readiness to interact with technology. This adaptation aims to provide a measurement tool for use in related scientific studies conducted in Turkish.

2. TECHNOLOGY READINESS INDEX (TRI)

Different characteristics of individuals also lead to variations in their perspectives on technology. In this context, Parasuraman developed the Technology Readiness Index in 2000 to assess individuals' readiness for technology adoption and their attitudes toward it. Parasuraman (2000) defines technological readiness on this scale as 'an individual's inclination to use and embrace technologies to accomplish the goals that these new technologies aim for in both their work and personal lives.'

The Technology Readiness Index, as a measure of an individual's adaptation to new technologies, can be defined as the assessment of an individual's propensity to accept new technologies. TRI focuses on an individual's ability to evaluate their inclination to adopt new technologies, rather than assessing their proficiency with technology. Furthermore, technological readiness is considered important in understanding how people embrace or adapt to new technology (Parasuraman, 2000).

The Technology Readiness Index comprises four components. Parasuraman regards optimism and innovativeness as positive factors (enablers), while discomfort and insecurity are seen as negative factors (inhibitors). Consequently, Parasuraman (2000) models these four components as follows:

Optimism: A positive attitude toward technology, believing that it offers individuals more control, flexibility, and efficiency in their lives.

Innovativeness: The inclination to be among the first to adopt new technology, acting as a technology pioneer or leader.

Discomfort: Feeling that one cannot control technology and that technology guides them.

Insecurity: Technological insecurity arises from distrust of technology due to privacy or personal concerns, as well as concerns about technology's proper functioning and its potential negative consequences. Consequently, there is a tendency to be skeptical about what technology is capable of.

Technological advancements differentiate healthcare processes. Furthermore, medical technology has been identified as a critical factor in improving life expectancy and quality of life for the global population. The technology market is expanding, with factors such as rising healthcare costs, an aging global population, and the prevalence of chronic diseases all contributing to this growth. However, a review of the literature reveals that healthcare providers often resist the adoption of new technology. In this regard, it is deemed crucial to assess employees' readiness for technological systems. Based on this issue, this research aims to adapt the Technology Readiness Index to Turkish culture.

3. RESEARCH METHODOLOGY

3.1. Sampling and Participants

The research was conducted at the Ankara Training and Research Hospital in Ankara Province with the participation of 1,915 employees, including 1,650 healthcare workers and 265 administrative staff. The study aimed to include the entire population of both healthcare and administrative personnel, considering the accessibility of the research. However, healthcare workers and administrative staff who did not use health technologies were not included in the study. Participation was limited to those who were present in the hospital during the research period and agreed to take part. Participants were selected using a random sampling method adapted to the conditions of healthcare workers. Volunteers available during the study period were preferred. To ensure representation proportional to their prevalence in the overall staff, the initial sample size was set at 322. Due to an excess of volunteers, this number was increased to 763. Hospital workers were categorized based on their job roles, and this categorization was used to calculate their distribution within the total workforce.

Table 1. Stratified Sampling of Health and Administrative Personnel at Ankara Training and Research Hospital

Stratified Number	Title	Number	Stratified Weight	Weight of the Stratified in the Universe X sample size	Number of Participants Included in the Sampling
1	Doctors	658	658/1915=0.34	109.48	194
2	Nurses and Midwives	689	689/1915=0.36	115.92	242
3	Health Technicians	303	303/1915=0.16	51.52	80
4	Administrative Staff	265	265/1915=0.14	45.08	170
	Total	**1915**		**322**	**763**

Those who did not agree to participate in the study, who filled out the forms used in the study's evaluation incompletely and inconsistently, and who left the interview midway through the research were excluded from the study. Due to a high number of missing data in the survey forms of 25 health workers, it was decided that these forms were not filled out carefully, and therefore, they were not considered in the analysis. Statistical analyses were conducted on data obtained from 763 participants. The study reached 40% of the total population.

The study group consisted of 55.6% females and 44.4% males. Regarding the age distribution, 45.6% were in the 18-32 age group, 30.3% in the 33-42 age group, and 24.1% in the age group of 43 and over. 67.6% of the participants were health personnel and 32.4% were administrative staff. 46.9% of the study group were nurses, 37.6% physicians, and 15.5% health technicians. The Technology Readiness Index (TRI) was applied to 763 individuals, and a validity study was conducted on data obtained from 437 health workers, randomly selected from approximately 60% of the data set. The appropriateness of the scale's theoretical structure for the group of health workers involved in the study was determined based on the randomly selected 437 individuals.

3.2 Data Collection

The data were collected through face-to-face interviews and a questionnaire technique. The directive section of the questionnaire states that the data collected during the questionnaire's application will only be used in scientific studies. It emphasizes the importance of providing honest and correct answers to the questions and items in the questionnaire, assures that individual results will not be shared with anyone else, and clarifies that there is no need to write a name on the questionnaire. Additionally, the individuals in the research group were informed of this information during the application process, and the 'Informed Voluntary Consent Form' was signed.

3.3. Study on Translation

For the adaptation of the scale, initial contact was made with Parasuraman, the developer of the scale, via email. To obtain the necessary license to use the Technology Readiness Index (TRI), the 'TRI terms and conditions' document sent by the author was signed, along with documents affirming that the study would be conducted solely for academic purposes. Thus, the license to use TRI was obtained. Subsequently, each item of the scale was translated from English to Turkish by four individuals: a faculty member expert in psychometric measurements who has conducted scientific studies in the field, completed their master's degree in England, is fluent in both languages, and well-acquainted with both cultures; a computer engineer; and two English teachers residing in the USA.

The translation process began by introducing the subject of the scale to the translators. The original language items of the scale were provided to the translators, and space was left below each item for translation into the target language. After all items were written, a 'Suggestions' section was added at the end of the page, reserved for experts' opinions on the translation of the items or the scale in general. The initial translation was carried out independently and individually by the experts. The translations were then organized by the researcher, and translations made by the four translators were added under each item. The most suitable translation for the translated scale items was then determined. The completed translations were reviewed by an English teacher expert in both languages and cultures, and after confirming the appropriateness of the translation for the target language, necessary corrections were made. Then, the items translated into Turkish were reverse translated back into the source language, and the consistency between the two translations was examined by the same four experts who translated from English to Turkish.

As pointed out by Erkuş (2010), incorrect translation of terms used in scale items can lead to errors in all subsequent procedures. Therefore, after translating the items, an adaptation study was conducted, and whether the terms conveyed the same meaning was examined and verified by expert opinion. Following these evaluations, the form of the scale adapted to Turkish culture was created, and a pilot application was conducted on a group with similar characteristics to the main application group. This group was selected from individuals working in the same hospital and using technology. A stratified random sampling method was used to ensure homogeneous representation of the title population. In scale development studies, the sample size should be between 5 to 10 times the number of items (MacCallum et al., 1999). Therefore, the 36-item scale was applied to at least 5 times as many individuals, resulting in a sample of 187 people.

Following the pilot application, Confirmatory Factor Analysis (CFA) was conducted using data obtained from 187 individuals, and it was concluded that 10 items needed revision. In this process, the 10 items that were not understood by health workers were revised according to reasons identified by experts, and the final form of TRI adapted to Turkish culture was prepared for validity and reliability studies.

3.4. Ethical Dimension of the Research

All stages of this study were conducted in accordance with the Principles of the Helsinki Declaration. The study was approved by the Ankara University Ethics Committee, under the ethics committee approval required for the implementation of the study, with the decision dated 17 July 2017 and numbered 210. Additionally, written permission was obtained from the institution where the study was conducted, and informed consent was obtained from all participants. Furthermore, necessary permissions were obtained from Parasuraman to acquire the license for using the Technology Readiness Index (TRI).

3.5. Data Analysis

Exploratory Factor Analysis (EFA) is used when the number of factors among the items is unknown and which items determine which factors, while Confirmatory Factor Analysis (CFA) is used if there is a strong theory regarding the structure. Before conducting EFA and CFA, it was essential to verify if the analyses' requirements and assumptions were met. During this process, the appropriateness of the sample size for factor analysis and the presence of missing data were assessed (Karagöz, 2016). It was determined that the data set had no missing data. As stated by Crocker and Algina (2006), a criterion of having a sample size at least 5 to 10 times the number of items is considered suitable for EFA and CFA. Therefore, the sample size of 437 health workers, obtained by applying two different scales each with 36 items, is deemed sufficient for the analysis. Additionally, the Kaiser-Meyer-Olkin (KMO) test, another technique for determining the suitability of the collected data for factor analysis, was utilized. A KMO value of 0.90 and above indicates excellent suitability for factor analysis (Tavşancıl, 2010). The calculated KMO value for the scale (KMO=0.97; Bartlett's Test of Sphericity=0.00) confirms that the sample is suitable for factorization. Hence, it was concluded that the data set met the sample size conditions and was appropriate for factor analysis.

To check for univariate outliers, z-values outside the range of -3 to +3 were analyzed. No individuals deviating significantly based on the Mahalanobis distance were detected, indicating an absence of multivariate outliers in the sample. It was also necessary to determine if there was a multicollinearity problem between the variables (Çelik & Yılmaz, 2013; Karagöz, 2016). The VIF (Variance Inflation Factor), Tolerance, and Condition Index values were examined for multicollinearity among variables, and it was found that the multicollinearity assumption was satisfied. The assumption of multivariate normality was tested by checking for linearity with the multivariate normal distribution. Scatter plots and the result of Bartlett's sphericity test indicated that the data had a multivariate normal distribution, confirming that factor analysis could be conducted on the data set obtained from 437 healthcare professionals.

4. FINDINGS

4.1. Exploratory Factor Analysis

Based on the data obtained from 437 participants who fully and accurately completed the survey, the scale was subjected to exploratory factor analysis to reveal its factor structure and to determine its conformity to the original scale. The factor analysis was conducted using the 'Principal Component Analysis' approach. In this approach, the factor structure to be tested is purified from errors and specific variances, and the method works with shared variances (Suhr, 2006). The results of the exploratory factor analysis showed that the original form of the scale contained four factors with a total explanatory ratio of 68.90%. According to this structure, the scale has a form similar to its original, with 10 items in the Optimism sub-dimension, 7 in the Innovation sub-dimension, 10 in the Discomfort sub-dimension, and 9 in the Insecurity sub-dimension (Table 2).

Table 2. Expressions Regarding Scale and Factor Loads

Item No	Factor Loads			
	Optimism	Innovativeness	Discomfort	Insecurity
Item 1.	.775			
Item 2.	.772			
Item 3.	.744			
Item 4.	.747			
Item 5.	.772			
Item 6.	.757			
Item 7.	.775			
Item 8.	.735			
Item 9.	.774			
Item 10.	.750			
Item 11.		.788		
Item 12.		.762		
Item 13.		.698		
Item 14.		.656		
Item 15.		.709		
Item 16.		.788		
Item 17.		.762		
Item 18.			.713	
Item 19.			.669	
Item 20.			.759	

Table 2 (Continued). Expressions Regarding Scale and Factor Loads

Item No	Factor Loads			
	Optimism	Innovativeness	Discomfort	Insecurity
Item 21.			.668	
Item 22.			.695	
Item 23.			.559	
Item 24.			.668	
Item 25.			.680	
Item 26.			.747	
Item 27.			.479	
Item 28.				.647
Item 29.				.686
Item 30.				.706
Item 31.				.769
Item 32.				.734
Item 33.				.765
Item 34.				.737
Item 35.				.760
Item 36.				.766

For convergent validity, Composite Reliability (CR) and Average Variance Extracted (AVE) values were calculated for each dimension. It is desirable for the CR values to be 0.70 or above, and for the AVE values to be 0.50 or above for convergent validity (Hair et al., 1998). In this study, the AVE value was calculated to be 0.52, and the CR value was 0.97. Additionally, for each item, Cronbach's alpha coefficients when the item was removed and item-total correlations were calculated. It was determined that item-total score correlations varied between 0.49 and 0.82, and the removal of any item did not significantly change the Cronbach's Alpha coefficient (Table 3).

Table 3. Item-Total Statistics

Item No	Item-Total Statistics			
	Scale Mean If Item Deleted	Scale Variance If Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
Item 1.	119.98	970.74	0.82	0.97
Item 2.	120.18	976.48	0.78	0.97
Item 3.	120.13	982.87	0.69	0.97
Item 4.	120.14	981.88	0.72	0.97

Table 3 (Continued). Item-Total Statistics

Item No	Item-Total Statistics			
	Scale Mean If Item Deleted	Scale Variance If Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
Item 5.	120.11	967.69	0.81	0.97
Item 6.	120.04	973.08	0.78	0.97
Item 7.	120.17	974.70	0.77	0.97
Item 8.	120.08	976.35	0.79	0.97
Item 9.	120.17	971.17	0.82	0.97
Item 10.	120.28	972.39	0.78	0.97
Item 11.	120.27	987.24	0.69	0.97
Item 12.	120.21	980.70	0.72	0.97
Item 13.	120.35	982.62	0.69	0.97
Item 14.	120.23	991.02	0.62	0.97
Item 15.	120.27	991.51	0.62	0.97
Item 16.	120.26	984.77	0.67	0.97
Item 17.	120.37	990.80	0.59	0.97
Item 18.	120.18	987.65	0.68	0.97
Item 19.	120.43	991.77	0.60	0.97
Item 20.	120.26	986.46	0.66	0.97
Item 21.	120.43	987.02	0.69	0.97
Item 22.	120.25	986.56	0.69	0.97
Item 23.	120.24	992.42	0.49	0.97
Item 24.	120.23	989.76	0.62	0.97
Item 25.	120.31	997.62	0.57	0.97
Item 26.	120.32	983.96	0.76	0.97
Item 27.	120.48	989.41	0.60	0.97
Item 28.	120.35	981.57	0.63	0.97
Item 29.	120.43	988.04	0.57	0.97
Item 30.	120.40	981.51	0.68	0.97
Item 31.	120.35	980.45	0.69	0.97
Item 32.	120.44	977.91	0.69	0.97
Item 33.	120.44	987.26	0.64	0.97
Item 34.	120.45	983.20	0.66	0.97

Table 3 (Continued). Item-Total Statistics

Item No	Item-Total Statistics			
	Scale Mean If Item Deleted	Scale Variance If Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
Item 35.	120.45	975.02	0.71	0.97
Item 36.	120.32	985.58	0.61	0.97

4.2. Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) should be utilized to examine the theoretical structure of a measurement tool in scale adaptation studies, as suggested by Brown (2015). Additionally, CFA is necessary to verify whether the scale's theoretical structure is applicable and valid for the sample group to which it is being applied, as per Karagöz (2016). In this study, the aim of the CFA was to ascertain the validity of the TRI's theoretical framework for the sampled group. Consequently, data gathered from the sample was used to check whether the theoretical model proposed was indeed confirmed. To determine the validity of the four-dimensional TRI scale with the collected data, various fit indices should be employed (Hair et al., 1998). This includes the chi-square fit index and others for model-data fit assessment, such as CFI, NFI, NNFI, GFI, AGFI, which are model comparison-based, and RMSEA and SRMR, which are error-based fit indices. The presence of an ideal fit is indicated when model comparison-based fit indices are close to 1.00 and error-based indices are near 0.00. The high level of these fit indices indicates that the scales used are highly valid for the specific sample group.

To determine the extent to which the items measure the relevant theoretical structure, it is expected that the t-values representing the items' ability to represent the interested theoretical structure should be at least five times the critical value of 1.96 for a significance level of 0.05. Standardized factor loadings should be higher than the critical value of 0.32, and the error variance calculated based on the standardized factor loadings should be low (Jöreskog & Sörbom, 1993). After significant modifications suggested by the Lisrel package program were made separately for items under the same sub-dimension, it was observed that the t-values indicating the items' ability to represent the interested theoretical structure ranged between 11.99 and 24.40. These values are generally significantly higher, being at least five times the critical value of 1.96 for a significance level of 0.05. Upon examining the standardized factor loadings, it was determined that the obtained values ranged between 0.61 and 0.86, which is considerably higher than the critical value of 0.32. These findings indicate that the t-values are significant and higher than the critical value and that the error variances calculated based on the standardized factor loadings are low. Thus, it can be stated that the items measure the relevant theoretical structure quite well. In the Confirmatory Factor Analysis, the fit indices of RMSEA, SRMR, AGFI, GFI, CFI, NFI, NNFI, chi-square ($\chi 2$), degrees of freedom, and $\chi 2$/sd values used to examine the fit of the theoretical model with the collected data are given in Table 4.

Figure 1. Path Diagram for Standardized Factor Loads of Technological Readiness Index

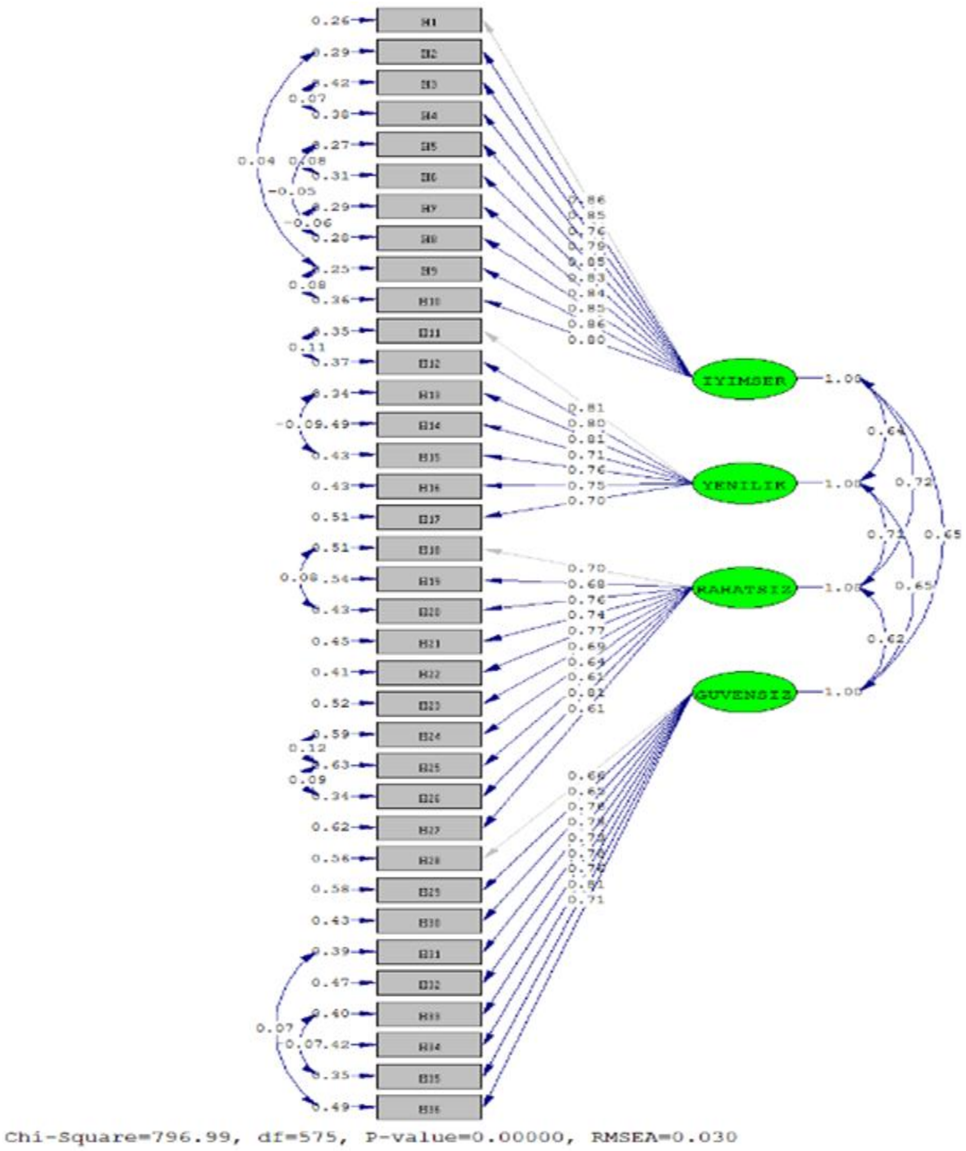

Table 4. Item-Total Statistics

Index	Value	Perfect Fit Values	Acceptable Compliance Values
χ^2	796.99		
sd	575		
χ^2/sd	1.39	$0 \leq \chi 2/sd \leq 2$	$2 \leq \chi 2/sd \leq 3$
RMSEA	0.030	0.00≤RMSEA≤ 0.05	0.05<RMSEA≤ 0.08
SRMR	0.034	0.00≤SRMR≤ 0.05	0.05< SRMR ≤ 0.10
AGFI	0.89	.90 ≤ AGFI ≤ 1.00	.85 ≤ AGFI <.90
GFI	0.91	.95 ≤ GFI ≤ 1.00	.90 ≤ GFI < 95
CFI	1.00	.95 ≤ CFI ≤ 1.00	.90 ≤ CFI < .95
NNFI	1.00	.95 ≤ NNFI ≤ 1.00	.90 ≤ NNFI < .95
NFI	0.98	.95≤ NFI ≤ 1.00	.90 ≤ NNFI < .95

Among the fit indices used to evaluate the model-data fit the chi-square ($\chi2$) value (796.99; p=0.00) was found to be significant at the 0.01 level. As indicated in the related literature the $\chi2$/sd value of 1.39 falling between 0 and 2. indicates a perfect fit. Similarly, RMSEA (0.030) and SRMR (0.034) values being between 0.00 and 0.05 suggest an excellent fit. Additionally, CFI (1.00). NFI (0.98). and NNFI (1.00) values being between 0.95 and 1.00 demonstrate the presence of a perfect fit (Kline. 2011; Schermelleh-Engel et al.. 2003; Tabachnick & Fidell. 2013). The GFI (0.91) and AGFI (0.89) values show that the model-data fit is within the acceptable limit values specified in the literature. Thus, upon examining the required indices in the Confirmatory Factor Analysis conducted. It was concluded that the theoretical structure of the scale. consisting of four sub-dimensions shows a fit with the data obtained from healthcare workers that is generally above the acceptable level.

4.3. Convergent and Discriminant Validity

To test the convergent and discriminant validity of TRI. the Technology Acceptance Model (TAM) Scale developed by Davis and colleagues was used. TAM is known in the information systems literature as one of the strongest and most widely used behavioral theories at the individual level for investigating the acceptance of technological systems (Lin. 2014). The correlation analysis conducted revealed a significant. high positive relationship between the two scales ($r=0.837$; $p<0.001$).

4.4. Reliability

To determine the reliability of the scale for the sample it is applied to, it is necessary to calculate the Cronbach's Alpha coefficient for all items of the scale and for each sub-dimension separately (Şencan. 2005). The Cronbach's Alpha reliability coefficient has been calculated to determine the reliability of TRI for healthcare workers. The Cronbach's Alpha reliability coefficient for this 36-item scale was found to be 0.97. Additionally, the reliability for the 'optimism' sub-dimension was 0.97, for 'innovativeness' 0.92, for 'discomfort' 0.92, and for 'insecurity' 0.94. According to the evaluation criteria indicated by Özdamar (2011), the reliability coefficients calculated for the internal consistency of TRI and its four sub-dimensions indicate that the scale is highly reliable. The correlation among the two split parts of the items and Sperman Brown coefficient is calculated 0.87 and 0.92, respectively. These results indicate high correlation among two split parts of items and high reliability.

4.5. Assessment of the Scale of Effects of Technologıcal Readiness Index

Parasuraman (2000) devised a five-point Likert scale called the Technological Readiness Index. "Strongly Disagree" and "Strongly Agree" are the two extremes of the scale. developed as a product Technological Readiness Index has 36 items and four dimensions as a result. The scale has a minimum score of 36 points and a maximum score of 180 points.

5. CONCLUSION AND DISCUSSION

In line with the objectives of the research, the Technology Readiness Index was translated into Turkish and data were collected and analyzed from two different sample groups. While translating the scale into Turkish. attention was paid to its suitability for the field and the expertise of the participants. Following the evaluations, a Turkish-adapted version of the scale was developed and a pilot application was conducted on a group with similar characteristics to the group for which the final version of the scale would be applied. As a result of the pilot application with data from 187 participants Confirmatory Factor Analysis (CFA) and Exploratory Factor Analysis (EFA) were conducted and it was determined that 10 items needed to be revised. During this process experts identified that these 10 items were not understood by healthcare professionals and made the necessary corrections to the items.

When measurement tools are used for different purposes and groups, validity tests need to be repeated (Kimberlin & Winterstein, 2008). Merely translating a scale into a different language is not sufficient; instead, the terminology in the scale items needs to be adapted to another language and culture, and validity studies of the scale need to be conducted (Karakoç & Dönmez, 2014). Therefore, this study utilized exploratory factor analysis to test the validity of the TRI scale. The exploratory factor analysis revealed that TRI consists of a four-factor structure, explaining 68.90% of the total variance. TRI has been used in different studies. Şekkeli (2022) at Kahramanmaraş Sütçü İmam University (KSÜ) used exploratory factor analysis to test the validity of TRI among vocational school students. This analysis determined that TRI consists of a four-factor structure. Due to the low factor loading of an item in the 'optimism' sub-dimension, two items in the 'discomfort' sub-dimension were removed. The factors explained 66.382% of the total variance. Aydın (2020) used factor analysis to test the validity of TRI among employees in five state institutions using EBYS software. The four factors identified explained 59.654% of the total variance. Durmaz (2021) in Istanbul used exploratory factor analysis to test the validity of TRI among employees of technology companies. This analysis led to the removal of 7 items with factor loadings below 0.50, resulting in a three-factor structure that explained 63.155% of the total variance. Factor Analysis is applied when scales are used in samples with different languages and cultures. However, a literature review often reveals that items with low factor loadings are removed from the scale. It is thought that the items removed from the Turkish-adapted form of the Technology Readiness Index are important in measuring the structure.

In adaptation studies, Confirmatory Factor Analysis (CFA) is also utilized to evaluate the model-data fit between the theoretical structure and the data. In the Turkish adaptation studies of TRI, no study employing CFA was encountered. In this study, when the required indices were examined following CFA, it was concluded that the four sub-dimensions of the scale's theoretical structure showed an overall acceptable level of fit with the data obtained from healthcare professionals. Pires et al. (2011), in their study conducted in Curitiba, Brazil, with 124 internet banking users and 107 non-users, translated the scale into Portuguese, reasoning that it had already been tested. They evaluated the model-data fit with confirmatory factor analysis using the scale's original structures. It was determined that data and model fit well in the dimensions of optimism and innovativeness. However, for the dimensions of discomfort and insecurity, except for NNFI, CFI, and RMSEA fit indices, other indices showed a slightly below acceptable level of fit, which was attributed to the small number of participants. Meng et al. (2009) found that TRI is a valid tool for both American and Chinese cultures in their study with 237 business students in China and 231 in the United States.

Following various validity and reliability analyses, the Technology Readiness Index (TRI) has been found to be valid for Turkish. TRI can be deemed a suitable scale for researchers working on related topics in the Turkish context. However, it should not be overlooked that the applicability of a scale in a different culture and language can be determined through exploratory and confirmatory factor analyses and validity tests. Therefore, the validity and reliability of the research are limited to the participants, which also restricts its generalizability. Additionally, survey bias exists in perceptual research. There can be discrepancies between participants' perceptions and reality, difficulties in recalling previous responses, exaggerated responses to meet superiors' expectations, and concentration deficiencies. Although it cannot be asserted that the scale is valid and reliable for all businesses across Turkey, further studies with participants from various fields, sectors, and positions could help enhance the scale's reliability. When considering the findings of the research as a whole, it can be said that the scale is a powerful tool for measuring Technological Readiness and can contribute significantly to related research.

For the study, ethics committee permission document dated July 17, 2017 and numbered 13/210 was obtained from the Ankara University Ethics Committee.

The study has been crafted in adherence to the principles of research and publication ethics.

The authors declare that there exists no financial conflict of interest involving any institution, organization, or individual(s) associated with the article. Furthermore, there are no conflicts of interest among the authors themselves.

Contribution rate: Idea/concept: Meliha Meliş GÜNALTAY (A1); Design: A1; Supervision/Consulting: A1, Ömer Rıfkı ÖNDER (A2), Emrah Gökay ÖZGÜR(A3); Data collection and/or processing: A1; Analysis and/or interpretation: A1, A3; Literature review: A1. Writing the article: A1; Critical review: A1, A2, A3.

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